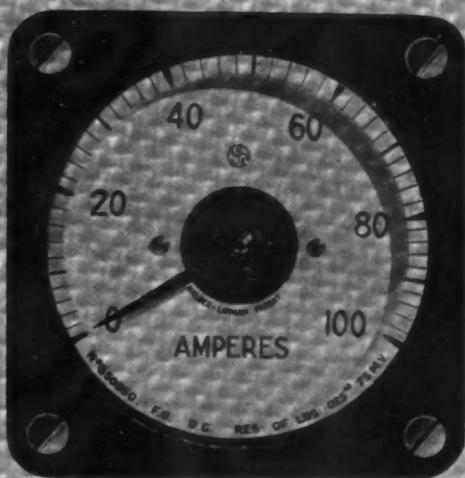


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Design

Ergonomics p.33



ERGONOMICS

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Council of Industrial Design June 1954 No. 66 Price 2s



No Man's Land

GREAT TRACTS OF AFRICA remain today much as Living-stone found them—silent, often beautiful, potentially fertile, but without human inhabitants. No man lives here, for he cannot survive without his beasts, and in those regions even the hardiest cattle are struck down by a deadly disease—trypanosomiasis—which is carried by the tsetse fly. Today, modern science is mounting a powerful offensive against trypanosomiasis. The spear-head of its attack is aimed at the malady itself, by providing drugs to cure the disease or prevent it developing in animals living in tsetse-infested areas.

In 1949, a group of I.C.I. scientists, working in laboratories in Manchester, evolved an entirely new compound,

'Antrycide', which can cure cattle stricken with trypanosomiasis. Even more important, however, is the protective effect of 'Antrycide', for animals treated with it can live in, or pass through, tsetse-infested areas, where there is better grazing. Similarly, herds can be protected during the long treks which they may have to make across dangerous tsetse areas in order to reach markets hundreds of miles distant. Many obstacles have to be faced by those who hope to transform the fly-belts of Africa into productive regions where livestock and agriculture may flourish. But the increasing use of modern veterinary drugs—of which 'Antrycide' is an outstanding example—will undoubtedly help towards a solution of this important problem.

Imperial Chemical Industries Limited



NUMBER 66

JUNE 1954

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Design

The Scottish Design Congress

THE SCOTTISH DESIGN CONGRESS held in Edinburgh last month was the third major event organised by the Scottish Committee of the Council of Industrial Design since its foundation - the other two being the 'Enterprise Scotland' exhibition of 1947 and the 'Living Traditions' exhibition for the 1951 Festival of Britain. As the chairman of the Committee said when announcing the plans for the Congress, this is not to suggest that the Committee has been resting between whilsts but simply that with small staff and funds a good deal of unspectacular ground work must be put in before building up to a major occasion.

Furthermore the particular structure of Scottish industry does not lend itself to frequent design exhibitions. The bulk of consumer goods bought in Scotland may always be manufactured elsewhere, but Scottish industry is of first-class importance to British design as a whole, not only for its own weighty qualities but for the international prestige of many of its products - two factors which perhaps militate to some extent against a readiness to explore new designs.

That is why the Scottish Congress, like the first of its kind organised in 1951 in London, was addressed primarily to active directors of Scottish businesses, whether from manufacturing or distributing companies and whether from private enterprise or public services. The speakers likewise, though drawn from farther afield, had all had first-hand experience of business problems. The theme of the Congress - that promotion of good design is a high-level responsibility in industry, commerce and the public services - is one that must bear a lot of repetition before all are convinced of its commonsense.

The invitations to representatives of public authorities served to underline the indivisibility of good design, for consumers are as important as producers in raising and maintaining standards, and school, hospital, transport or local government officials represent Purchasing Power with capital Ps.

Although the Congress was not timed to exert much influence on the 'Scottish Industries Exhibition' to be held next September, those who attend both will perhaps visit the latter with a keener eye for design standards, whether in the products themselves or in their display, presentation, packing and promotion. DESIGN will have an opportunity later in the year of reviewing this famous Glasgow exhibition in the light of last month's discussion in Edinburgh.

POINTS and POINTERS

THE BATTLE FOR KNIGHTS-BRIDGE

The idea that 'contemporary' is just another word for 'utility' dies slowly. The standards set by the war-time utility furniture have certainly had a great influence on post-war designs; many of the simplifications of modern furniture are traceable to those modest, economical war-time shapes. It was natural, too, for post-war makers of modern furniture to get as near to the utility prices as they could, with the result that contemporary designs entered the market at the middle and lower reaches, making little or no impact at the top.

This has posed a serious problem

for the modern movement in furniture, since taste, like water, flows downhill. Unless modern designs could win an upper-class following their ultimate success would be in doubt, but they were unlikely to win this following so long as they offered no element of conspicuous expenditure such as is afforded by expensive antiques or reproductions.

It is against this background that we welcome the opening at the end of April of the new furniture and furnishings department at Woolland Bros Ltd, of Knightsbridge. Not only are the pieces on view selected for their quality, finish and a sophisticated exclusiveness (the store has gone far afield to collect foreign as well as British examples) but the shop itself, situated in a stronghold of conventional taste, has a long-standing reputation for safe, traditional merchandise. If modern design can be offered by Woolland's who can doubt its security and respectability?

SPACE-FRAMES In October 1953 DESIGN reported on the Vere Engineering Company's Bartrev process for making chip board in a continuous automatic press. Last month the company staged an ingenious and fashionable exhibition at its Marks Tey works to show the many uses of this economical material — ingenious because of the airy simplicity of the exhibition structure which is designed for touring; fashionable because of the emphasis on currently favoured 'space-frame' motifs. The exhibition shared with the distinguished Northern Ireland BIF exhibit a likeness to a three-dimensional game of chess, being a series of transparent cubes built of the lightest metal spars. The furniture, whether for offices, shops, bars or homes, was dramatically rectilinear, supported on thin, straight members, reflecting the astringent ideas of advanced American designers. The whole display is shortly to visit New York.

HER MAJESTY'S YACHT BRITANNIA



Sitting-room for HRH the Duke of Edinburgh



Sitting-room for HM the Queen

CASE HISTORY

CONTINUOUS-BURNING FIRE



The REDFYRE 55 in the showroom of W. N. Fray & Sons Ltd

SINCE THE WAR the rising demand for economical continuous-burning fires has brought many different appliances on to the market. The REDFYRE of Newton, Chambers & Co Ltd is one of them and the first model was introduced in 1946. The firm was well qualified to begin work on this type of fire, as it has been making domestic heating appliances since 1793. In the REDFYRE and similar appliances, fuel is consumed in a specially designed grate with a regulated air supply to control the rate of burning. By banking up the fire and cutting down the air supply the fire will burn all night. The REDFYRE has a movable fret extension which can be lifted into a position that

increases the height of the fire. While this acts as a safety guard at night it can be reversed to provide a trivet for day use.

The REDFYRE 55, the current model, is best considered as a case history which describes the design and development of earlier versions. The work has been carried on by the general manager of Newton, Chambers' light-castings department. In 1946 a fire was designed for use with a 'back-boiler' made by the firm: at a later stage it was sold separately owing to the demand for an independent unit.

The story is one of development largely conditioned

Continued on page 12

1946

The first REDFYRE model. The construction is of cast iron except for the firebrick. Air flow is controlled by a spinner mounted by a screw thread in the fire door, which itself pivots forward on a ratchet to allow more air to reach the fire. The moulded step formation on the fret is intended to break up the flat surface and visually reduce the height of the fire. Originally the fret extension was not reversible, but later the advantage of hanging the extension on the front of the fret when it was not required for night burning made the addition of retaining lugs necessary. The front-to-back dimensions of fireplaces are variable

and to supplement the fixed bottom grate shown, a flexible tripod support was devised. (The 1948 model uses this exclusively.) Sealing lugs can be screwed to the sides of the fret to anchor the fire to the hearth and connect closely with the sides of the fireplace.

A few thousand models of this fire were produced by hand moulding on the foundry floor - a slow batch-production process causing dimensional variations. For example, when inserting the screw thread on the spinner, a slight inaccuracy in depth meant that when the spinner was closed the cross-member would not be horizontal. As the

tool for opening the fire door has to fit in the slot in this cross-member, and can only operate effectively when this is horizontal, the door, which is too hot to touch, would pivot out of control when lifted clear of the fret.

The effects of hand moulding and unequal cooling of the parts which are variable in section meant that heavy machine grinding was needed to ensure close fitting. Any surface variation, flaws in the iron, etc, had to be obscured with russet mottled enamels, not the most popular colours.

DAY BURNING POSITION

NIGHT



1948

The first model was criticised for being angular: its spinner was thought to be too large and clumsy for its job. Accordingly the 1948 model was designed with sufficient radii to allow the metal to flow easily in the mould. The stress set up by unequal cooling during the enamelling process was reduced by adhering where possible to a more even section.

Instead of pivoting forward as in the 1946 model, the fire door is hung from the top of the fret opening and can be held in three open positions by a ratchet resting on the lower member of the fret. This lower

member is in fact the mould joint which has been simplified and tapered to avoid undercutts. The indented line shaping on each side of the fret, although it appears to be mannered, has been designed to allow the fret extension, when in the horizontal position, to rest more safely on the fret. When vertical, however, the fret extension was unstable and could fall forward. It could be manipulated by inserting the tool in a moulded slot in the forward edge.

A cast iron back plate was fitted to the fret extension to protect the enamel surface from excessive heat. It was held by sup-

porting wings which also served to brace the extension against bowing when cooling. The main fret itself was also ribbed for this reason. The spinner with its cross-member for taking the lifting tool was again mounted on a screw thread and suffered from the same problems as the 1946 model. To meet the varying dimensions and shapes of fireplaces the bottom grate was mounted on a flexible stand.

Several hundred thousand models of this fire were produced by a fully mechanical process. The colour range was reduced to four as against twelve in the 1946 model.



1952

This is an experimental model which reached the stage of being made up as a prototype in cast iron. Simple moulding forms were used and these together with an even section allowed the metal to flow easily and helped to reduce stresses during cooling. At one stage the design was considered suitable for pressed metal work, but the outlay on tools would have to be justified by an exceptionally long production run.

In the 1948 model ash could fall forward and rest on the fire door which projected

slightly owing to its moulding joint on the upper edge. Any unevenness in the edge of the enamel at this point had to be removed by grinding to ensure an air-tight fit. In the 1952 model the fire door recedes in the lower part of the fret and would not catch the ash.

The 1952 model incorporated a separate sealing frame, mounted inside the fret, and on this the fire door could close tightly. In the 1948 model the spinner was thought to be too bulky and in the newer model it has been noticeably improved. Instead of

the independent bottom grate and stand, the 1952 model used no leg supports and cantilevered the grate from a specially large sealing bracket. The projecting lugs on the edge of the grate could be removed if necessary to fit a fireplace of unusual shape. (The cantilevered grate has been adopted for the latest model.) The problem of preventing the fire door from bowing when cooling was explored on this model and a satisfactory vertical cross-member was adopted for use on the latest model.



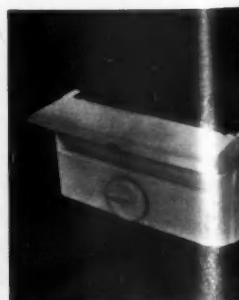
1953

The better appearance and function of the latest model is based on experience gained in the three earlier versions. It is strikingly simple. The overall height of the previous fires had been unnecessarily great and in this model it has been reduced to a minimum. A large production was planned and savings in metal were sought. The spinner was redesigned, made smaller and placed so that it overlaps a much smaller air hole. Although mounted on a screw thread the cross-member when closed need not be horizontal, for the lifting tool

engages between the lower segment of the spinner and the front of the fire door. Mild steel ratchets for setting the position of its fire door are hung on the side, as in the versions of 1946 and 1952, where they proved to be practicable. In the earlier models the front of the fire could become 'dead' because no provision was made for an air passage at that point. Here the air is allowed to flow up in front of the firebrick and through the lugs of the bottom grate behind the fret. A specially strong chrome-steel grate is cantilevered from the sealing lugs,

a method first tried with the 1952 prototype. The grate itself has cross-bars of V section and can be reversed to allow coke to burn better when supported on the point of the V.

The fire is now in large-scale production. It is evident that the experience gained since 1946 has enabled Newton, Chambers to improve the efficiency and appearance of the REDFYRE. Design problems have been solved at all stages to make manufacture and assembly easier as well as to improve the appearance of the fire.



TION

NIGHT BURNING POSITION



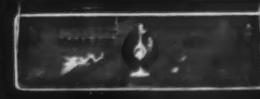
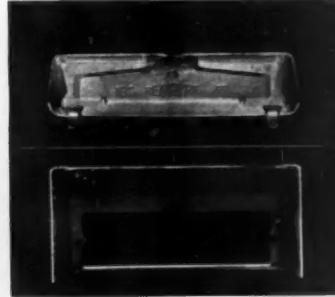
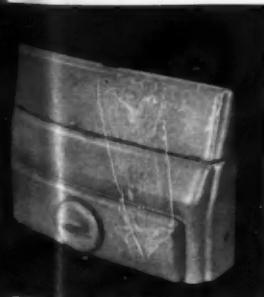
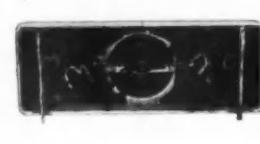
BOTTOM GRATE



FRET EXTENSION AND THE FRET FROM THE REAR



FIRE DOOR FRONT AND REAR



1946

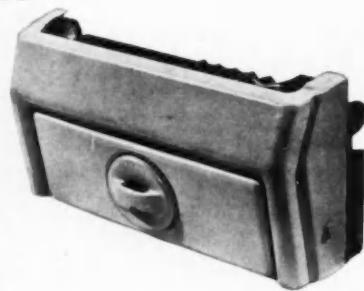
REDFYRE WITH OPERATING TOOL



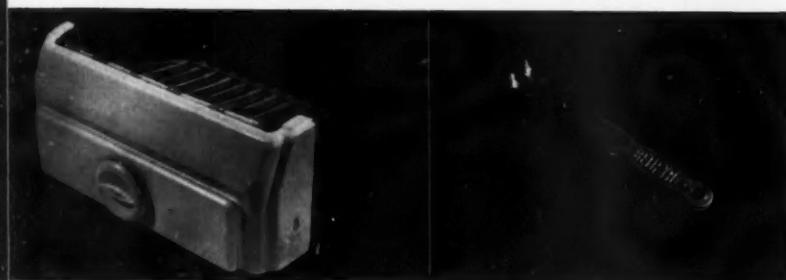
1948



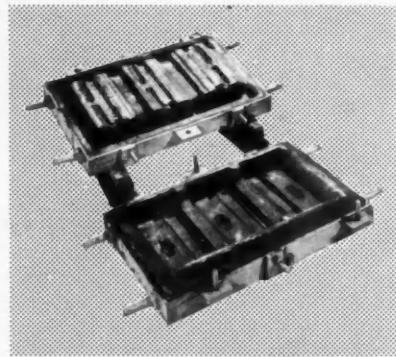
1952



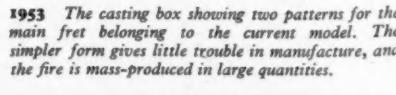
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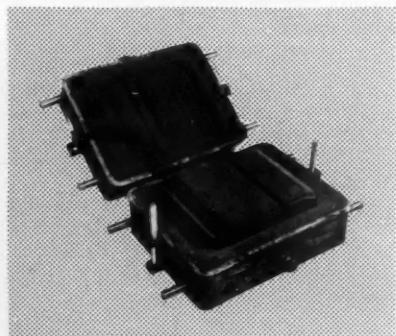
by the manufacturing methods available. The first fire was made by the relatively slow batch-production process, but by 1948 the succeeding model went into full production, based on the conveyor belt system. The design of this fire solved most of the problems, including those involved in the vitreous enamelling process, and its form is basically similar to the current model. The only major criticism to be made is one which, from the user's point of view, seems to be important. The air flow to the fire is controlled on all models by a spinner, set in the front of the fire door. Although a special tool is provided for operating the spinner, which would be too hot to touch, its form encourages the user to move it with his fingers. M.F.



1946 *The casting box for the first model. The sand impressions made by three patterns for the main fret are shown before the metal is poured. The complexity of the form with awkward radii around which the metal has to flow made it impossible to rely on perfect results each time. The fire was batch-produced in relatively small quantities.*



1953 *The casting box showing two patterns for the main fret belonging to the current model. The simpler form gives little trouble in manufacture, and the fire is mass-produced in large quantities.*



ERGONOMICS

human data for design

J. Christopher Jones *

Ergonomics can be defined as 'the scientific study of human work' or 'the study of the relationship between man and his working environment'. The following article describes how this comparatively new science can help the industrial designer.

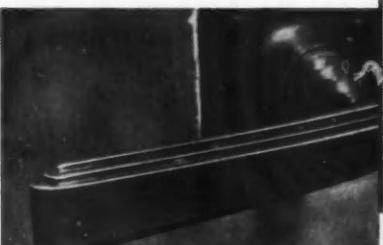
THE NAME 'ERGONOMICS' was coined by the first members of the Ergonomics Research Society, who originally met in the summer of 1949, as an informal group of research workers interested in the study of human work. A new name was chosen to avoid association with physiology, anatomy, psychology or any of the other disciplines with which the first members were concerned. 'Ergonomics' comes from

* One time member of the CoID industrial staff, now with Metropolitan-Vickers Electrical Co Ltd.

1 A door handle designed by Jack Howe. Although it is not based directly on ergonomic research it is the result of careful consideration of the shape of the hand. The largest area is perpendicular to the applied pressure, the cross-section fits the hand and the manner of gripping, with the thumb resting on the flat surface, is indicated by appearance and feel.



2 and 3 These door handles illustrate the common error of designing for appearance rather than feel. In both cases hand pressure is applied on a narrow edge while the largest area is directed towards the line of vision in a manner that is more decorative than functional. The handles were made by James Gibbons Ltd, modified by D R U, 2; and Comyn Ching & Co Ltd, 3.



4 This handle has an adequate surface to take hand pressure but the rectangular profile does not conform well to the shape of the palm. Made by Dryad Metal Works Ltd.





5

the Greek *ergon*, work, *nomos*, natural laws (to distinguish from *logos*, man-made laws).

The group very soon grew into a full Society with a membership not only of university research workers, but also those interested in the application of human research in industry. In addition there is now a substantial membership abroad. The Society acts as a link between research workers in different scientific spheres or technologies and also between research workers and potential users, in this country and abroad. Its first symposium, on equipment design, was the subject of an article in DESIGN by Sir Ben Lockspeiser (May-June 1951 page 7).

The new subject grew up in war-time, many ergonomists having worked on the problems of human control of military machines, particularly aircraft, where the extremes of human adaptability are approached. Ergonomics is a co-ordinating science in that it attempts to draw together related fields such as physiology, psychology, motion study and production engineering and is particularly relevant to industrial design. It is expected that the results of recent research in the subject will become available in the form of handbooks for designers which will provide quantitative information about human factors in



6

design. Such information, it is claimed, will be of great value since a more exact appreciation of design problems will be possible.

The design of clothes and shoes has for long been made easier by the presence of human measurements in the form of patterns and lasts which are perhaps early examples of the ergonomic approach. Recent research on sitting postures, which provides designers with information on the dimensions and shapes of seats, gives point to the ergonomic argument that guesswork, tradition and personal opinion are an inadequate guide to measurable human quantities. A report on this subject* points out, for example, that most chairs for female workers are designed in ignorance of even the elementary fact that women's legs are much shorter than men's.

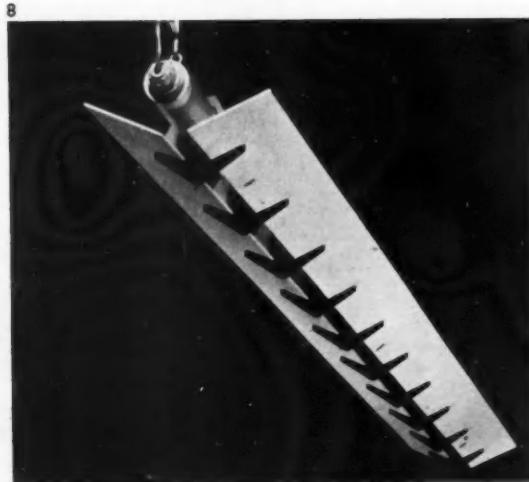
The results of ergonomic testing can provide a framework within which the designer can work with greater confidence. Ergonomics narrows down what is at present a wide and ill-defined field and leaves much less scope for purely fashionable trends in design. It shows that 'appearance' is by no means the only human factor involved but is mixed with a host

* STANDING AND SITTING POSTURES, Dr Bengt Akerblom. A. B. Nordiska Bokhandeln.



7

8 A fluorescent light fitting developed at the Building Research Station as the result of a study of glare and contrast grading. This fitting is designed to incorporate three principles that have been formulated as a result of this research: (1) Concealment of the light source by providing an adequate cut-off angle between the lamp and the bottom edge of the shade. (2) A reduction of lamp brightness, by shading with some suitable material, to between 1,000 and 1,500 ft lamberts, and at the same time to ensure a reasonable degree of gradation in brightness away from the 'hot spot' on the surface of such a shade. (3) To continue the grading of light from the fitting to its background by allowing a large proportion of direct light to be directed upwards through the top of the fitting.



9

9 Another fluorescent fitting designed at the Building Research Station photographed from above to show the generous provision for ceiling lighting and also the simple construction.

5 and 6 A chair designed by Gunnar Eklöf to a sitting profile developed by Dr Bengt Akerblom, a Swedish member of the Ergonomics Research Society. It is two inches lower than conventional chairs to avoid under-thigh pressure for both women and men. The sloping backrest allows frequent and easy change between the three sitting positions shown, 5. Dr Akerblom finds that sitting with shoulders drooped and no back support, sitting upright with lumbar support or leaning back with lumbar and thoracic support are equally restful positions. He does not advise designing a chair round a single 'ideal' position.

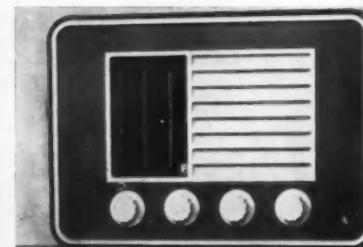
7 Another Akerblom chair designed by Gunnar Eklöf.

10 Each control of a radio should be shaped and situated according to its function. This radio, designed by Christopher Nicholson for Ferranti Ltd, illustrates the common fault of using a row of identical knobs which confuse those who have not memorised the function of each. Many old people never learn to operate such radios and depend on younger members of the household.

11 An ergonomic approach might lead to this type of design which is easier to understand. The volume control is the nearest to reach and is placed directly on the speaker opening. The wave-change switch looks like a switch and is at the end of the scale window behind which long or medium scales appear according to the waveband selected. The tuning knob is the only one directly in front of the scale.

12 Radio scales are seldom really legible. The MURPHY 144 shown here, which has been praised for its appearance and original use of plastics, has a small scale that is not easily read by old or short-sighted people. As the scale is the only part of a radio which has a purely visual purpose, it should be a dominant feature of the design. Decorative effects should not be obtained at the expense of scale legibility and optimum scale size.

10

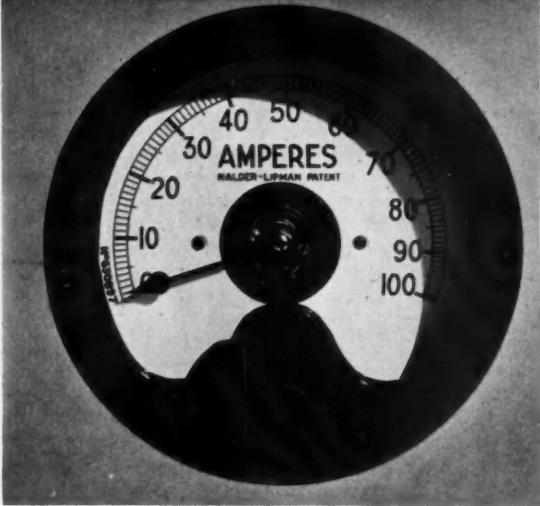


11



12





13



14

13 and 14 Old and new indicating instruments. The one on the right shows the advantage of a platform scale which keeps the graduations and figures free from

shadows and eliminates parallax. Both platform and pointer are in the plane of the bezel. The new instrument also shows the effect of omitting arc lines and using

the simplest graduation system consistent with giving the information required, a principle of scale design that is not followed in the older instrument on the left. There

of others governing the relation between men and machines, some of them empirically determinable. We learn that the immediate delight of the senses is of no more importance than the protection of the eye from strain during prolonged looking, the comfort of the ear, the possibility of relaxing and altering muscular tensions, tactile considerations, and the psychological effects of all such factors considered together. Just as the results of physical research make

possible a full statement of the problem in mechanical design, so ergonomics can provide a discipline and a guide to human design problems.

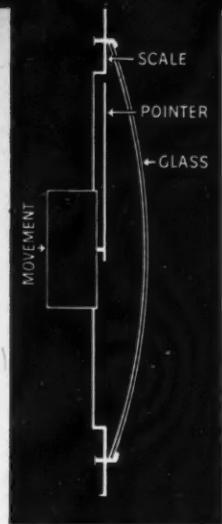
In making this point it is not claimed that intuitive considerations can be eliminated but that many things now left to intuition are not intuitive at all. The interpretation of ergonomic data and its application to any particular design call for all the imagination and aesthetic insight which can be mustered.



19



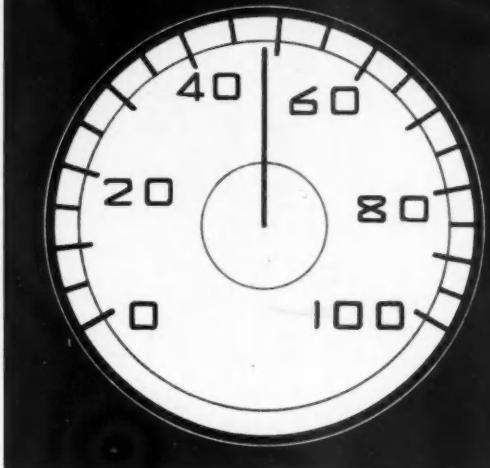
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15

15 and 16 Figures, scale marks and pointer drawn in proportions suggested by recent ergonomic studies for control board instruments. The cross-section shows a platform scale in the same plane as the pointer. The domed glass allows the scale to be in the same plane as the panel and helps to reduce reflection.

16

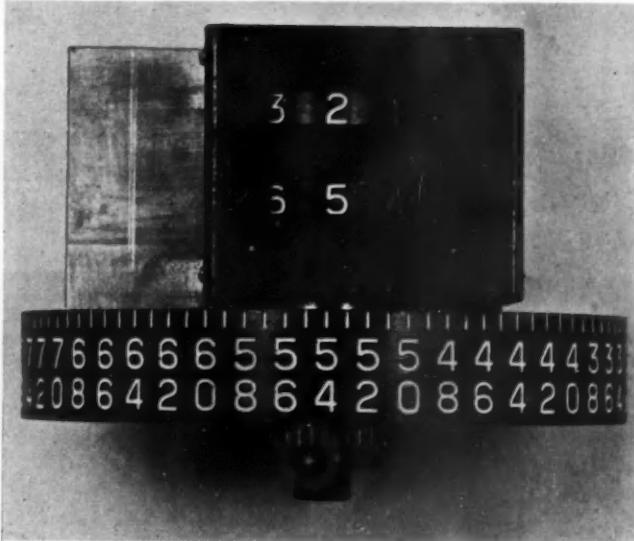


should not be more than five divisions between each major scale mark. Many indicators have more graduations than are justified by the accuracy of reading required. It is not always realised how accurately the eye can subdivide graduations into halves, fifths or tenths. The scales were made by Nalder Bros and Thompson Ltd.

17

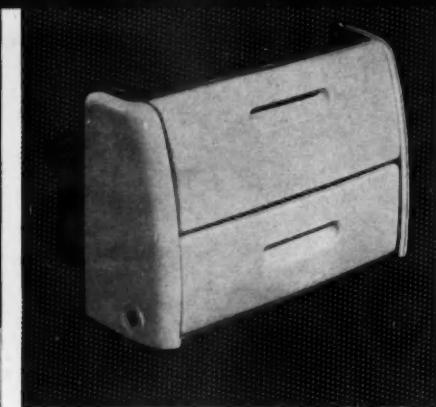


18



19 These figures for instrument dials are the result of ergonomic testing. It is found that errors in reading at speed are reduced compared with traditional figure shapes.

20 A set of figures designed by R. M. Kay of Metropolitan-Vickers for the same purpose. They have been designed for ruler-and-compass drawing, traditional curved forms having been given maximum differentiation between the figures 3, 5, 8, 6, 0. Neither industrial designers nor engineers find it easy to believe that the crude differentiation of the ergonomic figures is really necessary to avoid ambiguity.



REVIEW OF CURRENT DESIGN

The items shown are up to the standard acceptable for 'Design Review', the illustrated record of current British products, to be seen at the London headquarters of the Council of Industrial Design.



This swivel desk chair is one of several new pieces of office furniture designed by Robin Day for Hille of London Ltd. In the shape of the back and arms it recalls an example of the designer's earlier work—the well-known chair for the Royal Festival Hall. That chair marked an important stage in the partnership of designer and manufacturer which has resulted in the successful HILLEPLAN range of modern unit furniture besides many other imaginative designs for both home and office. The new chair has a moulded plywood shell with foam rubber upholstery covered with fabric or real leather. It can be obtained with either wood or metal legs and has a ball-bearing swivel action.

1 Cold, rain and hard seats create no problems for those possessing this tan rug and matching carrying case. The rug is waterproof and reversible and the case contains an inflatable plastic cushion. Designer: J. Kagan. Maker: Kagan Textiles.

2 The 'Seymour' all-night burning grate has clean, functional lines resulting from a careful integration of front and side plates. The front panel folds down to form a hob. The grate is made of cast iron finished in vitreous enamel. Designer: V. L. Thomas. Maker: Sydney Flavel & Co Ltd.

3 Washing day can be brighter with these clothes pegs obtainable in eight different colours. They are made of polystyrene with steel springs and are claimed not to rust, break, crack or become distorted when in use. Designers: M. Sedley, A. M. Golding and F. C. Slade. Maker: J. F. Kenure Ltd.

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12	13	14	15	16	17	18

4 'Pheasant', a rayon furnishing fabric with the design printed in grey on white. Designer: Agnes Wimborne. Maker: Gayonne Ltd.

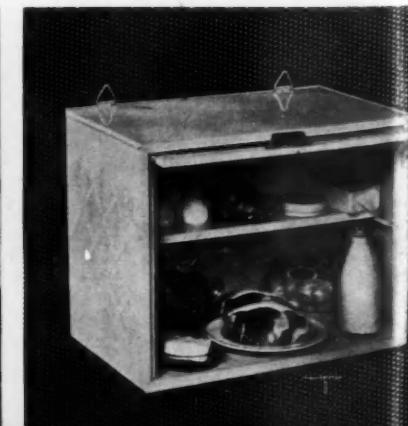
5 Turned corner pieces give the sideboard an appearance of lightness and poise which is further emphasised by the brass ring handles and the refined pierced decoration of the lower rail. Designer: Leslie T. Corke. Maker: Finewood Products Ltd.

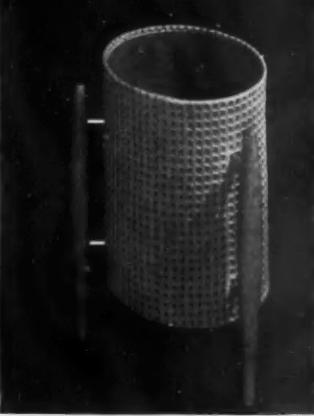
6 A new treatment for wastepaper bins. The tubs are of metal either painted or fabric-covered, with wood, brass or painted steel legs. Designer and maker: F. J. Willner.

7 Classical and restrained dining-chair of beech with mahogany or walnut finishes. The seat is cushioned with foam rubber. Designer: Peter Hayward. Maker: W. G. Evans & Sons Ltd.

8 'On the tiles', a printed furnishing cotton with a wittily drawn design in red on white. Designer: Pamela Feilder. Maker: Gayonne Ltd.

9 Simplicity, lightness and good looks are combined in this stacking chair. It has a black steel rod frame with natural willow-cane back and seat. Designer: Nigel Walters. Maker: Andrew Pegram Ltd.





10 Aluminium pail with a large radius curve at the bottom for easy cleaning and an extra thick base to allow use on a stove. The effect of precise machining is spoilt by the trademark. Maker: Corfield-Sigg Ltd.

11 The comfortable-looking settee is a new piece in the CINTIQUE range of furniture. It is covered in tapestry or moquette in various colours and is upholstered with DUNLOPILLO. Maker: J. Cinnamon Ltd.

12 No wall fixings are required for the range of unit bookshelves and storage cabinets. The legs slide over those of the unit below, giving the necessary stability, though the broken line of the end forms a rather awkward feature. Made of solid sapeli mahogany with sliding doors finished in black and white cellulose. Designer: John Roake. Maker: Roake Furniture.

13 The rayon canvas and hide travel case is in the tradition of good, simple design characteristic of the leather and allied industries. It has a flexible, light-weight cane frame and is available in many different colours. Designer: Paul Schenkel. Maker: Sewing Industries Ltd.

14 The problem of swinging doors in cramped kitchens has been overcome in this meat safe. Here the door slides up and is neatly housed out of the way beneath the lid. The safe is made of

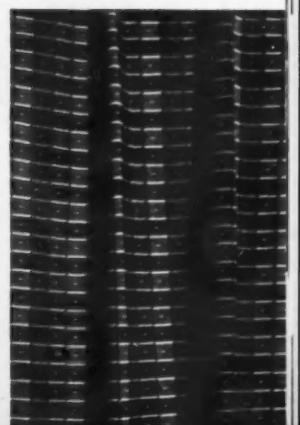
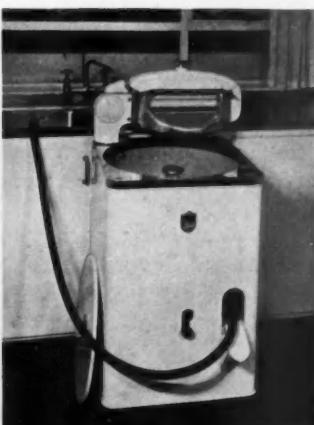
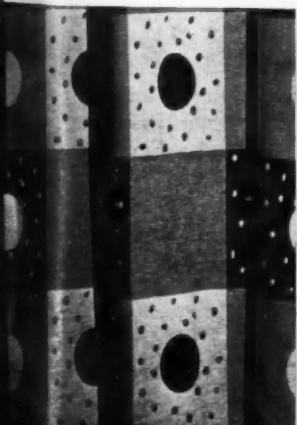
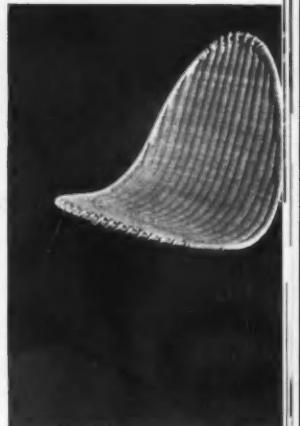
tin plate finished in green, cream or white stove enamel. Designer: S. Robinson. Maker: Willer & Robinson Ltd.

15 Woven furnishing fabric included in a prestige display of well-designed British goods chosen by the CoID and shown at the recent 62nd Royal Netherlands Fair in Utrecht. Designer: William Robertson. Maker: Donald Brothers Ltd.

16 Graceful proportions distinguish this dressing-table which is part of a new range mostly of bedroom furniture made of mahogany with inlaid ebony bands. The mirror folds down to give a flush top. Designer: Ward & Austin. Maker: Loughborough Cabinet Manufacturing Co.

17 All operations including washing, wringing and emptying are power driven in this washing machine which has a cabinet of sheet steel and a tub of rust-proofed vitreous enamelled steel. External metal parts are stove enamelled in white or cream except where they have a polished aluminium finish. Maker: The English Electric Co Ltd.

18 Another example of a woven furnishing fabric included in the prestige display of well-designed British goods at the recent 62nd Royal Netherlands Fair in Utrecht. Designer: Peter Simpson. Maker: Donald Brothers Ltd.





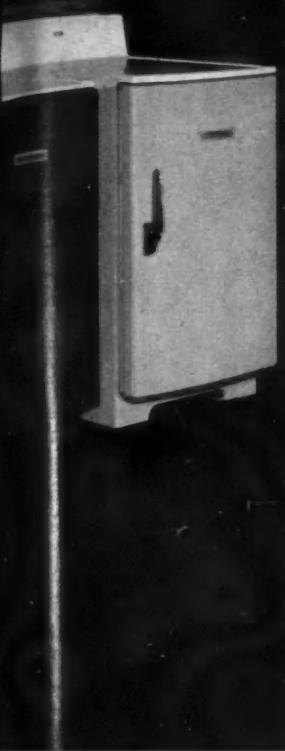
For the kitchen in colour

THE FRIGIDAIRE DIVISION of General Motors Ltd may have proved that colour - *real* colour, not cream and green - is a solution to many problems. The company recently showed its table-top refrigerator the TOR 42 in several strong colours at the DAILY MAIL 'Ideal Home Exhibition', checking the reactions to them with a comprehensive questionnaire filled in by housewives. The company is naturally not prepared to announce the detailed survey results, but the refrigerators are going into production with five standard colours immediately. The vivid colours, intended as eye-catchers to draw the crowds on to the stand, attracted much publicity, and gave a market survey of potential consumers' reaction for the cost of a few coats of paint. There were other factors involved, however, besides success in the exhibition.

General Motors has plants in many countries including the United States and Canada, and it is policy

that all these plants should compete aggressively for markets. This competition is unaffected by the supply from this country to many other General Motors' plants of an essential component, the METER-MISER, a completely sealed rotary compressor. Because of the immense tooling costs for this component, a production line at Hendon is kept running 23 hours a day, seven days a week.

Early in 1954, German competition was increasing, and both Germany and the U.S.A. had tentatively introduced pastel colours for refrigerators. At the same time the market situation in this country revealed that a vicious triangle perpetuated the white refrigerator: the manufacturer made what the retailer wanted; the retailer wanted what the housewife had bought before; the housewife could only buy what the manufacturer made. There was overwhelming statistical evidence that the housewife was in fact satisfied,



RIGHT The plastic name-plate is simple and straightforward in design and avoids the flashy styling clichés of many American models.

LEFT A range of TOR 42 refrigerators, showing some of the new colour finishes that are now becoming available.

BELLOW One of the refrigerators with its door open showing the rich effect of the contrasting white interior and coloured exterior.



make its larger models available in bright colour finishes, though it is not expected that there will be a great demand for these models compared with those finished in cream or white.

The TOR 42, which has a capacity of 4·25 cubic feet and is powered by the METER-MISER, will be produced in a range of five standard colours, with the table-top in white vitreous enamel. This top is not supplied if the model is required for building-in with other kitchen units. The shell is formed from a one-piece wrap-round of steel for top and sides, with a rear panel and base frame all welded to give a light rigid structure. This shell is finished with a stoved, plastic-based enamel. The door is a steel pressing, with a rubber sealing gasket and has a plastic inner panel. The whole interior is finished in a vitreous enamel and is insulated by glass fibre. Rust-resistant steel shelves and a drip tray of plastic are fitted.

It seems that Frigidaire has solved two common problems; how to lead a competitive market, and how to ring the changes on an existing and successful design with the minimum re-tooling. One method is to add a yard of assorted gilt and chromium styling; Frigidaire's answer is simpler, cheaper, better and would appear to be extremely successful.

Jack Stafford

as surveys by the Electrical Association for Women and I C I's Paints Division had shown.* In this situation it takes courage to see if the public might not be even more satisfied with bright colours.

The idea came from the director and general manager, A. W. Porter, who had one trial refrigerator sprayed bright red. Other executives, who had been strongly against the idea at first, were won over when they saw the actual model, and particularly the contrast between the white top, coloured body, and the white interior. The new colour range will not be confined to the small table-top refrigerators. Frigidaire has also decided to



*PEOPLE AND PAINT by Mass Observation Ltd for the Paints Division of I C I Ltd.
TOWARDS PERFECTION, the design of domestic electrical equipment by E. Elmirt Edwards for the Electrical Association for Women.

DESIGN

for

CARAVANS

3

Advice on
appearance needed

John E Blake



In this third article in the series, the problem of raising the standard of design in caravan interiors is discussed. The machinery for advising manufacturers on new developments in design already exists to a large extent in the National Caravan Council, the industry's representative organisation. The way in which such advice could be given and some of the places where it is most needed are set out in detail below.

PREVIOUS ARTICLES IN THIS SERIES showed how many of the basic problems in caravan design can be attributed to the structure of the industry itself – too many small firms, too many models on the market, out-of-date building methods, not enough capital for research and development. There are, however, many ways in which the design of caravans can be improved within the conditions that already exist. We have seen how some firms have succeeded in building caravans by traditional methods with exteriors which, in

design, are basically good. Yet when it comes to the interiors they are, with but few exceptions, tasteless, dull, out of harmony with the exteriors and often shoddily finished.

Advice on many technical aspects of design is given by the National Caravan Council. This body is perhaps unique among trade associations in that it represents all aspects of the caravan movement, including both manufacturer and consumer. In its endeavour to raise the quality of the industry's



1 2

LEFT Holiday-makers will welcome the large flap in the 'Europa' which can be opened to allow free movement in and out of doors during warm weather. The flap can also serve as the roof for a tent extension, the canvas walls being suspended from a rail attached to the outer edges. Made by Berkeley Coachwork Ltd.

1 The interior design of the 'Europa' does not live up to the impression created by her external appearance though there are several unusual features. The formed plywood roof lockers successfully overcome the problems created by these often clumsy features though their unhappy relationship with the top of the

wardrobe calls for further thought. Made by Berkeley Coachwork Ltd.

2 Conflicting patterns in the carpet and the curtains and covers give this interior a muddled appearance which is emphasised by the shapes of the roof lockers and the folding partition which does not fit the ceiling. The lighting fittings appear to have been added arbitrarily rather than as an integral part of the overall design, an irritating fault common to most caravans. Made by Thomsions (Carron) Ltd.

3 Though produced on a large scale and moderate in price the interior of this caravan shows that considerable thought has been given

to the choice of fabrics and the proportion and finish of the furniture. Cupboard and locker doors are double faced (an unusual refinement in low-priced models) but are spoilt by the use of crude surface hinges (see detail page 25). Made by Eccles (Birmingham) Ltd.

4 Good quality in detailing and finish is to be expected in the models of this firm which produces some of the most expensive craftsman-built caravans in Great Britain. The use of the WHITEHEAD fabric creates a gay and inviting atmosphere though the pattern is rather large in scale to suit the proportions of a caravan interior. Made by Bertram Hutchings Caravans Ltd.



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products it has set up a design and development committee to issue recommendations and establish certain basic standards in caravan construction to which it requires all manufacturer members to conform. Those firms which have carried out the recommendations and can prove that they are financially reliable may apply for inclusion on the Council's list of approved manufacturers - a list which has been compiled to protect the buying public from the makers of unreliable models.

So far, however, the design and development committee has avoided questions of aesthetics. Here far more difficult and controversial problems are involved, and though advice on appearance design would undoubtedly benefit the industry, the Council is wary of imposing too many restrictions on manufacturers' freedom. There can be few objections, however, to a service which could either be available on request or could issue recommendations of a general nature without obligation. Caravan design is a complex and

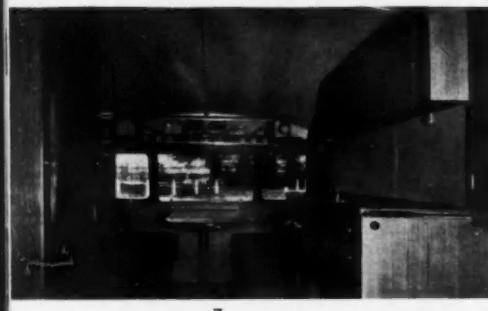
elusive problem in which the conflicting requirements of a compact home and a vehicle must be reconciled. A box-like shape gives the maximum living convenience but is unsuitable for a road vehicle, while the placing of furniture and equipment for ease of living may provide an unsatisfactory weight distribution for towing. At the same time an external shape designed primarily for its behaviour on the road will impose strict limitations on the layout of the interior. The restrictions on length to 22 ft, and on width to 7 ft 6 inches, create additional difficulties.

Clearly, therefore, there is no easy solution and no ready-made answer to the essential problem which can only be worked out after long periods of research and experiment. Much could be done, however, in the co-ordination of interior units and in the refinement of detail, once the basic specification for a caravan has been decided. It is here that a design advice service would be of most use. Particularly unsatisfactory is the range of standard fittings available

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5 Mirrors help to give the interior of this caravan a feeling of spaciousness. The eye is less happily deceived by the apparently thick table which is made of plywood and is hollow underneath. When folded down it can be dropped down to join the two settees, making a double bed. Made by Berkeley Coachwork Ltd.

6 The four-berth 'Lynx' is another example of a caravan where the interior design falls short of the standards set by the exterior. Though the furniture is well made and the fittings are generally of good quality, the proportions and decorative effects are unimaginative. How much better would a brightly coloured plastic wall covering have suited this holiday caravan rather than the brown imitation leather which has been used. Made by O. G. Lywood Ltd.

7 The illustration shows one of several living-room arrangements in a well-finished caravan with a heating unit which supplies hot water to the kitchen and bathroom, and warm air through a duct to the bedroom. The roof lockers are unobtrusive and have neat sliding doors. The firm has experimented with dotted patterned leathercloth wall coverings and modern fabrics. Made by Rollalong Ltd.

8 The two-berth 'Lynx' with a separate end kitchen has many good qualities. The introduction of this cottage type china cabinet, however, is completely out of character. The display of specially decorated tableware is a good idea but surely something better could have been used than this banal design. Made by O. G. Lywood Ltd.



9 A neat kitchen unit in the 'Europa' spoilt by the crude door catches and the imitation tiling which fools nobody. Cook would welcome a light above the sink. Made by Berkeley Coachwork Ltd.

10 A well-planned and carefully finished kitchen in the two-berth 'Lynx'. The generous handles, particularly on the sliding doors, help to prevent warping of the light materials necessary in caravan construction. The kitchen is excellently lit by the long windows. Made by O. G. Lywood Ltd.

to manufacturers, many of which could be improved in both function and appearance. Butane lighting fittings and door furniture are often completely out of character with the interior schemes while solid-fuel burning stoves, roof ventilators, sink units and so on are frequently so poor in both design and quality that many caravan manufacturers have them made specially to their requirements.

Colour schemes for both interiors and exteriors of caravans are almost always unimaginative. Cream is the most popular colour and this is often used indiscriminately on most available surfaces, apart from those which are panelled with plywood. This persists in spite of the many developments in interior decoration which have taken place in recent years. Colour and pattern can be valuable in confined areas and can be used to give a greater impression of space than actually exists. It also seems to be forgotten sometimes that a living van needs to be cosy and cheerful, particularly in cold weather, while a holiday van

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should be gay and colourful. More experiments could be made in the use of new materials for wall coverings. Several excellent types of leathercloth and other plastic fabrics are now being produced which would be ideal for the purpose and would add rich and glowing colour to caravan interiors. Modest use of these materials, especially the imitation leather or simple dot-pattern varieties, has already been made but there is scope for more imaginative applications.

Similar shortcomings exist in the choice of fabrics for seat coverings and curtains. The fabrics most popular with manufacturers are cheap, conventional prints in rust and green, though some firms have gone so far as to choose bold Baroque or Jacobean designs which are fantastically out of scale with the proportions of caravan interiors. A few firms, however, have started a trend for contemporary fabrics but even these have been used unimaginatively.

Suggestions could be made, too, for the use and treatment of woods to steer manufacturers away from

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13 *Ugly surface hinges are irritating features which destroy the appearance of unity in many caravan interiors.*

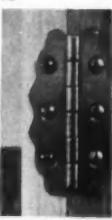
14 *This cupboard door handle of moulded plastic is simple and unobtrusive in shape but its appearance is spoilt by the ugly bolt fixing immediately underneath. Some excellent types of concealed door catches are available which are quite secure enough to ensure that doors would not swing open while the caravan is being towed. This handle is supplied by Gordon Ray & Co Ltd.*

15 *This type door handle is said to please the customers but its bogus ornament is an anomaly in modern caravans. Note the awkward way it is attached to the fillet of this wardrobe door. The example is made by the Craven Engineering Co Ltd.*

16 *This fitting by Tonks & Co Ltd for wardrobe doors, etc., has an efficient action though its projection from the door surface may become a source of annoyance in confined spaces.*

17 *Well-designed fittings such as this door handle by the Willen Key Co Ltd are too often ignored by caravan manufacturers, partly because there are not enough good fittings available and partly because the problem of choosing them is seldom given serious consideration.*

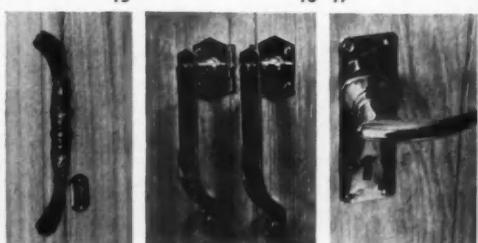
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11 *A far too common example of an unsuitable choice of fabric for a caravan. It would be difficult to find a design which was more incongruous in its setting than this flamboyant, Baroque pattern used for both curtains and covers. The interior of this caravan, by Marston Caravans Ltd, contains much that could be improved in design.*

12 *A craftsman-built caravan notable more for its thorough workmanship than any outstanding features in design. More attention is given to detail than in most caravans - note for example the way in which the lockers fit the curve of the roof. The kitchen unit can be completely enclosed when not in use. Made by Carr Trailers Ltd.*

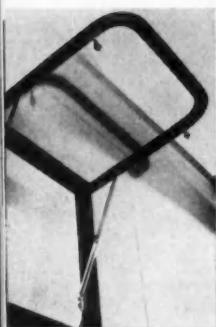
their predilection for heavily varnished oak. A good deal of the sales and promotion literature issued by firms is poor and it is encouraging to see that the CARAVAN AND TRAILER TRADES JOURNAL has already drawn attention to this point.

The attitude of the industry generally is that the public is not yet ready to accept modern design. One manufacturer said that with the increasing influence of contemporary architecture, furniture and fabrics brought to the public notice through various media, a demand for modern design will automatically follow. "In such a competitive industry, however, it is considered a risk to produce an ultra-modern product when the public has not yet made up its mind in such matters. We have attempted to create an interest by the use of DAVID WHITEHEAD fabrics but met with strong die-hard opinion." But to strive after the 'ultra-modern' is to by-pass the fundamental problem and suggests that good design is too often mistaken for the

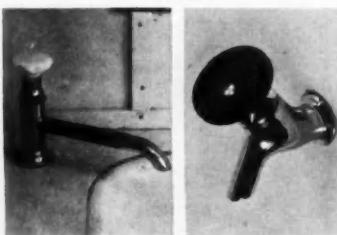
spurious styling of the cocktail bar, the picture palace or the smart American car.

If, however, there is one aspect of caravan design today which is encouraging, it lies in the industry's attitude towards period styles even for the most luxurious caravans. In any site in England, hundreds of caravans can be seen varying from crude home-made boxes on wheels to elaborately appointed 'mobile homes' - yet to find a Georgian caravan, a Gothic caravan or a Tudor caravan would be a difficult task. Caravan manufacturers since the war have mostly been uncompromising in their endeavour to find the most direct and simple solution to the problem of interior design. The period styles are avoided because the public has never asked for them. The jazzy modern styles are avoided because the public is not considered to be ready for them. The result should be an excellent foundation for the services that industrial designers could provide.

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19 20



18 This new type of caravan window fastening allows windows to be opened to any angle up to a maximum of 90 degrees from the vertical and at the same time dispenses of the normal type of catch on the sill. The maker, HarDall Ltd, has also developed a form of glazing which will enable the windows to be exported without glass.

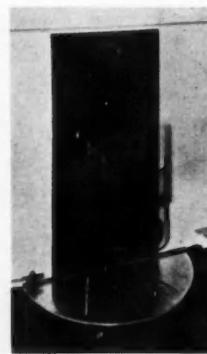
19 Pumps and taps are among the most satisfactory fittings in caravan interiors. This hand pump by the Weltis Engineering Co Ltd looks and is efficient.

20 Another example of a simple and clean-looking fitting which is used in several well-known caravans. This tap is made by Peglers Ltd.

22 21 In appearance some of the least satisfactory among caravan fittings are the butane lighting units which resemble examples of Victorian plumbing. Caravan manufacturers seldom regard lighting fittings as an integral part of interior design but appear to attach them to any convenient surface. This example is by S. T. Meggitt & Sons Ltd.

23 Many firms complain that there are few solid-fuel burning stoves compact and small enough to be used satisfactorily in a caravan. Compare this example of a standard fitting, by Arthur Taylor & Co Ltd, with some of the specially designed stoves.

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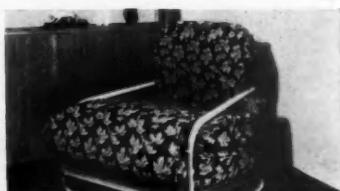
23 Solid-fuel burning stove specially designed by Rollalong Ltd for use in the firm's own caravans. The fitting is small and neat yet it is sufficient to warm the living-room, heat water for kitchen and bathroom and in some models to supply warm air to the bedroom.

24 Another specially designed stove by Berkeley Coachwork Ltd. Note how it has been designed to fit flush with the wardrobe so that it becomes an integral part of the interior.

25 This stove was both designed and made by Bertram Hutchings Caravans Ltd, maker of WINCHESTER caravans. Great care and attention has been paid to detail and finish in spite of the fact that the stove is normally enclosed by an expanded metal door.

26 and 27 This chair, which can be converted into a single bed, is made of tubular metal, plywood and foam rubber. The idea is ingenious and practical though refinements of the mechanism might result in a better appearance. The chair was designed and made by Rollalong Ltd.

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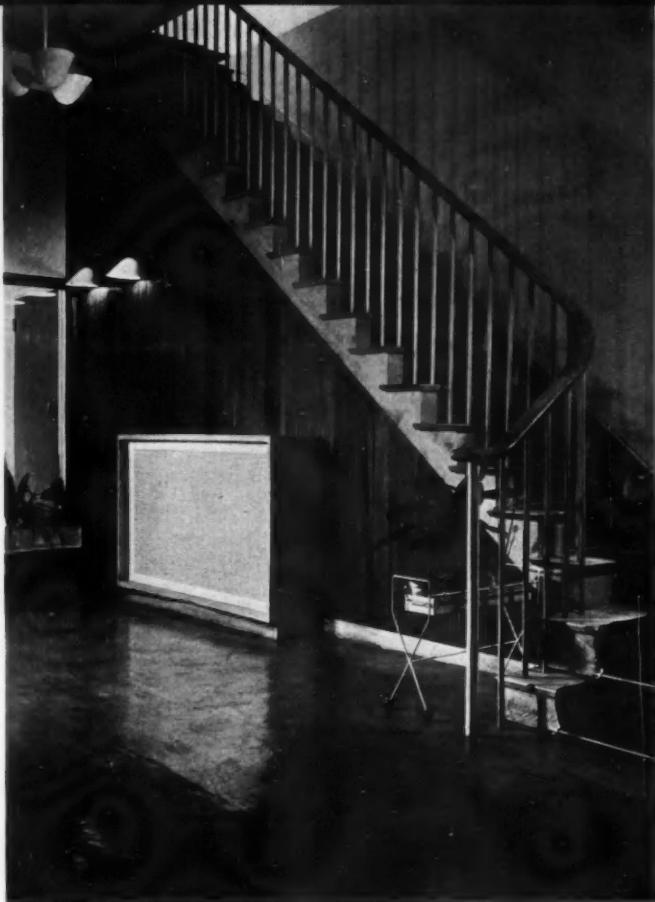


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ABOVE The entrance hall on the ground floor. On the right is a new staircase and balustrade of oak carpeted in red. The radiator against the fluted Australian walnut spandril has an oak frame with a perforated metal grille painted yellow. The floor is covered with grey rubber tiles.

BELOW The managing director's office on the first floor. The John Line's wallpaper, designed by Lucienne Day, has a brown background and this colour is repeated in the curtains. The carpet is bluish grey

and the chairs are covered with a green fabric.

BELOW RIGHT The reception area on the left of the entrance hall. The wall on the right has a John Line's paper in grey, black and white, while the curtains, designed by Lucienne Day, are grey with white, red and black motifs. Walls are pale grey and yellow, the carpet is red to match the stairs and the chairs are black with white flecks. Radiator casings are white with reeded asbestos painted yellow.

Office conversion

AN EXISTING BUILDING, which had been used for semi-industrial purposes, has been converted into new offices and a studio for the Technical and General Advertising Agency. The accommodation available covers four floors, the ground floor being devoted to a reception and delivery area with rooms for porters and a telephonist; the first and second floors being used for offices and the fourth for the studio. Colour schemes were evolved to give a sense of continuity to the general areas such as corridors and staircases by the use of the same greys, yellows and red, while each of the offices was given individual decorative treatment. Modern wallpapers and fabrics give an effect of richness to these rooms, though some of the larger, patterned wall surfaces might become overbearing without the addition of carefully grouped pictures. The architects were Max Lock and Partners and J. L. Perlston was in charge of the conversion.

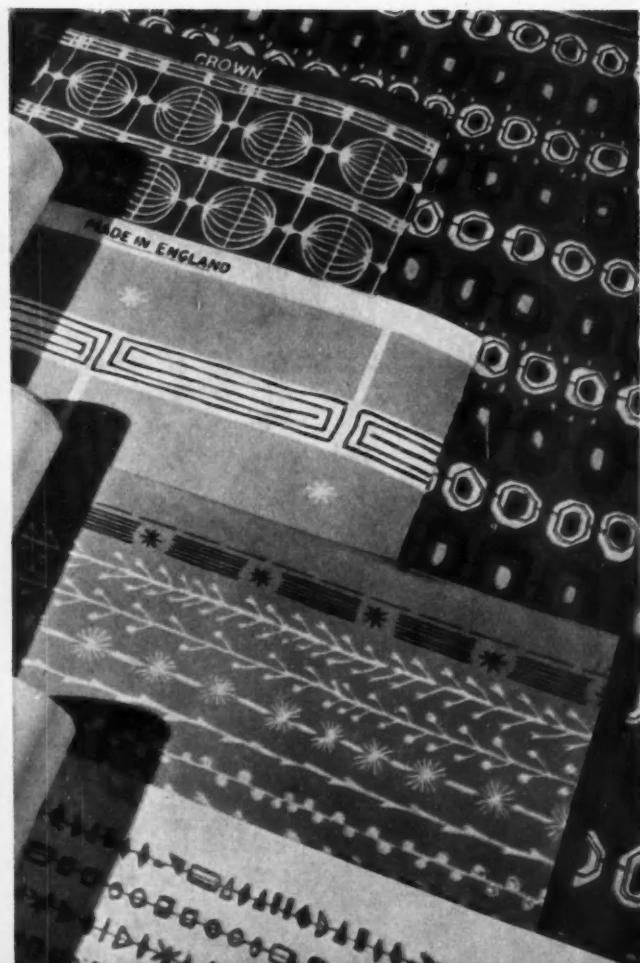
General Contractors: A. E. MONK & CO. Carpets, lino and rubber flooring: CATESBYS LTD. Furniture and curtains: HEAL'S CONTRACTS LTD. Plants and plant containers: SHEARNS. Light fittings: MERCHANT ADVENTURERS LTD and FALK STADELMANN & CO LTD.



New patterns on paper

FEW PEOPLE who went to see the recent exhibition of CROWN wallpapers at the Portman Square headquarters of the British Colour Council could fail to be heartened by what appears to be a new breath of life and vitality in the Wall Paper Manufacturers Ltd. Here were assembled a collection of mostly machine-printed papers which for their price were bolder in design and richer in colour than any British papers yet seen in London. This sign of a new and growing emphasis on the production of low-priced modern papers within the WPM group was mentioned in the review of the Sanderson exhibition (DESIGN January pages 7-10). It is perhaps significant therefore that in this latest exhibition only about six of the papers were in the

BELOW *The new ARCHITECT'S BOOK OF ONE HUNDRED WALLPAPERS* which includes all except two of the papers illustrated here.



high-price hand-printed ranges, the others being all under 10s a piece. That most had been shown previously in Manchester, at an exhibition in the company's new showroom in King Street, is perhaps an affirmation of the saying that "What Manchester does today, the world does tomorrow".

It would be misleading, however, to conclude that these exhibitions showed a representative selection of the company's products as a whole. Though the designs are more vigorous and there are many more good ones in the new ranges than were contained in the pattern books of two years ago, they still represent a very small proportion of the company's total output. There will always be a market for some of the fine traditional patterns which are still produced. However, the demand for the commercial papers - the 'porridge' and the conventional florals in rust and green - is much more extensive and so long as it continues it



1 HAY 721, block-printed, four colourways. Studio design. Not included in the ARCHITECT'S BOOK OF ONE HUNDRED WALLPAPERS.
2 C670, machine-printed, two colourways. Designed by Robert Nicholson.
3 C619, machine-printed, two colourways. Designed by David Brain.
4 C625, machine-printed, two colourways. Designed by Roger Nicholson.
5 C649, machine-printed, two colourways. Designed by Lucienne Day.

will, no doubt, be satisfied. There is also considerable resistance to the new papers among many decorators and merchants whose conservative taste will be difficult to overcome.

It is important therefore to discover the reasons for devoting so much attention to the few modern papers available. Broadly they are twofold. Firstly, the considerable publicity given to modern interior design in recent years through the medium of the Press and exhibitions means that designs of this type have news value. It is also understandable that a firm should wish to be known by its most adventurous products rather than by its 'bread and butter' trade. The second reason, however, is more profound and springs from a sincere belief among some members of the company that quality and good printing are not enough but must be backed by the best that British designers can produce. The initial stimulus was not the result of a deliberate policy decision made at board level, for the Wall Paper Manufacturers Ltd consists of eight mills all of which exist as separate entities and compete fiercely for markets. Each mill is responsible for the production of its own range of patterns and a few mills have realised that, while the markets for traditional and commercial papers are well catered for, there is virtually an open field for mass-produced papers of modern design. At first the new patterns were introduced cautiously but the success of the first book of *ONE HUNDRED CONTEMPORARY WALLPAPERS*, published two years ago, convinced those who were doubtful and the new *ARCHITECT'S BOOK OF ONE HUNDRED WALLPAPERS* is the result.

The title of the book is significant for it explains a new method of promoting sales. All registered architects are entitled to a sample of the pattern book, and thus it is hoped to appeal directly to those responsible for the countless building projects that are being undertaken throughout Great Britain. Further point is given to this approach by the appointment of an architect, Ian Colquhoun, who was recently attached to the Architects' Department of the British Transport Commission, to take charge of a new advisory department to be set up at the company's London office. If the scheme is successful, and there is little reason to doubt it, the prospect of having a much wider range of livelier, brighter patterns is hopeful.

J.E.B.

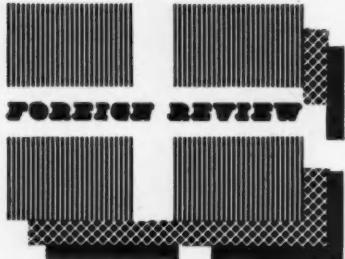


TOP C685, machine-printed, two colourways. Studio design.

included in the ARCHITECT'S BOOK OF ONE HUNDRED WALLPAPERS.

BOTTOM LEFT HAY 730, screen-printed, three colourways. Studio design. Not

RIGHT C682, machine-printed, two colourways. German studio design.



USA

Designs by Charles Eames

FRANK NEWBY

BOTH IN THE UNITED STATES and in this country Charles Eames has a considerable reputation as a designer of furniture – particularly chairs. His understanding and control of new materials and manufacturing processes are expressed in all his furniture in a very personal way. There is a marked clarity in his shapes and detailing which is influencing design standards accepted by the American public. He also has many interests outside furniture design including photography. This has led him to make a number of unusual films in his own home, one centred around his collection of toys and another on washing a school yard. Eames finds that films have a value in that they focus his interest and allow him to demonstrate his understanding of the potential relationship between very different things, which is his main strength as a designer.

He trained and worked as an architect in St Louis, and later taught at Cranbrook School of Design in Detroit, where in 1940 he won, with Eero Saarinen, a first prize for a chair in a competition held by the Museum of Modern Art, New York. The chair was made of moulded plywood, but owing to difficulties in the technique of manufacture, some of which were brought out by the design, serious production was held up. During the war Eames moved to

California where he worked on moulded splints and aircraft components of plywood. By the time he was again able to concentrate on chairs, he had learnt much about this material, and the success of his exhibition in 1946 was due principally to his development and use of plywood to produce double curves. The exhibition attracted the attention of the Hermann Miller Furniture Co of Michigan and the following year the firm started the assembly and distribution of Eames' furniture.

Eames works with his wife Ray and has a house and studio designed by himself. He also has an office in the Hermann Miller works near Los Angeles which are secondary to the parent works in Michigan and were set up for his work. He has benefited from the close co-operation between design, manufacture, assembly and

distribution, while from a study of mass-production and factory methods he evolved first the glass fibre and then the wire chairs. As the Hermann Miller Co only assembles components supplied by independent manufacturers it was not strange that Eames used very different materials in succession. His early chairs were little more than ideas lacking a sense of finality and it is from his appreciation of the limitations of the materials and the possibilities of the manufacturing process that he has been able to develop such refinements of design. So far his influence on design in this country is more apparent in work on moulded plywood than in the newer materials. But as the industry develops a more scientific approach to furniture design and experiments with plastic moulding techniques his influence may well increase.





1



2

1 The legs and spine are directly assembled with seven connections. The seat and back are then attached through rubber shock mounts which are secured with a thermosetting adhesive and which have threaded metal inserts to receive machine screws. The flexibility of such joints imparts a marked resiliency to the chair.

2 The moulded plywood lounge chair is moulded between heated platens from sheets of veneer bonded with a thermosetting resin. The

seat and back are from five sheets and the legs and spine from nine sheets. The finish of most of these parts is in the form of an impregnating resin sprayed on the surface of the veneer and cured against the platen.

3 The same moulded plywood seat and back can be combined with a chromed steel frame with screw connections to rubber shock mounts. The frame is made up by spot welding together a number of shaped bars. The feet are set in rubber-mounted chromed steel runners.



3

10

10 The upholstered plastic arm chair appeared in 1953. The upholstery is made up from four pieces of foam rubber directly covered with patent leather or coloured textiles with an adhesive and which are stitched together to form a shape similar to that of the chair. Along the edge is a continuous wire which snaps over the shell to form a neat efficient fixing.



6



9



8



5



4 From plywood Eames turned to glass fibre plastic as a material whose limitations in shape are only controlled by the technique of manufacture. The high cost of dies makes mass-production necessary and since his first moulded plastic arm chair appeared in 1948 approximately 100,000 chairs have been produced.

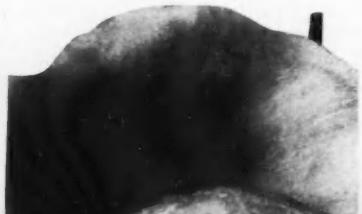
5 The seat only is made from plastic, while the different types of legs are either of wire, as shown, or of timber or of chromed steel rod. In all Eames' chairs the components are such that they can be stacked to facilitate transport and storage until assembly.

6 One of the problems with glass fibre plastic is its low resistance to penetration of point loads and its connection to other materials. Eames successfully used his standard rubber shock mounts as shown in detail to distribute the load from the shell through a large area to the legs.

7, 8 and 9 In the construction of the seat glass fibres are cut into short lengths as they pass into the head of a cyclone which has for a base a perforated screen of the same shape as the chair. The glass fibres are pulled up against the screen by a suction pump to produce a preform of about 2 inches in thickness. The preform is then set between male and female dies, a predetermined amount of polyester

resin poured into the preform and the matched dies then closed on this combination. The resin is forced between the fibres and cured at a temperature of 250 degrees F for five minutes. The female die is shown in **7** and **8** before and after the glass fibre preform is inserted while in **9** the male die is seen about to be lowered. There is no finish applied to the shell and colouring is achieved by addition to the plastic.

7



11 Eames' wire chair is well known for its appearance and lightness in construction. The possibilities in welding individual wires together to form a doubly curved surface very easily were realised in this design. The spot welding is achieved in three operations followed by the attachment of the two continuous edge wires and the wire base to take the legs.

12 and 13 Although the wire chair is comfortable there is the need for upholstery. This is of foam rubber covered either side with plain or coloured material and with a continuous wire along the edge for fixing to the chair. This simplicity in connection is common to all Eames' chairs.

14 and 15 The foot of a space frame leg construction is shown in detail. The end of the wire has a spherical button to fit into the rubber dome cover of the chrome steel runner. For any position or inclination of the chair the runner always provides a full bearing area on the floor.

16 With the wire chair Eames developed a number of standard leg constructions which are shown here. They are all either screwed or bolted to the wire or plastic seats in the same position so that there are many possible combinations of seat and legs.

17 and 18 Eames' latest chair which appeared in 1953 is a glass fibre plastic dining chair with standard rubber shock mounts and leg construction. The shape of the shell which is approximately one-eighth of an inch thick produces sufficient flexibility in itself which, coupled with the flexibility in the connections, results in a very comfortable chair.

19 Charles Eames.



11



12



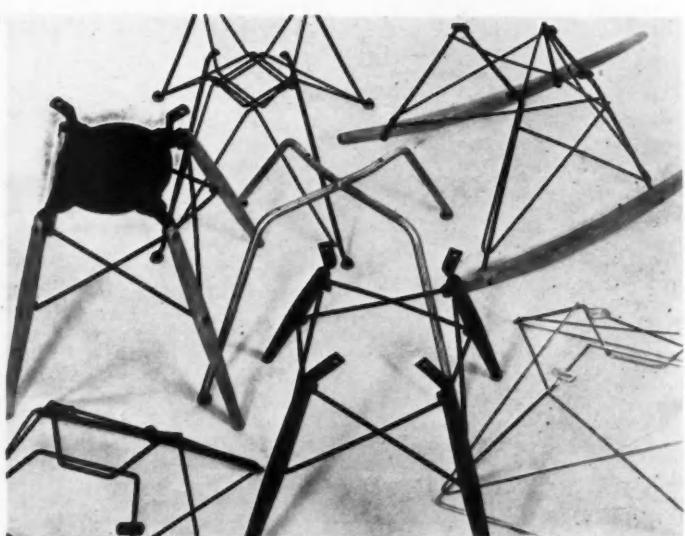
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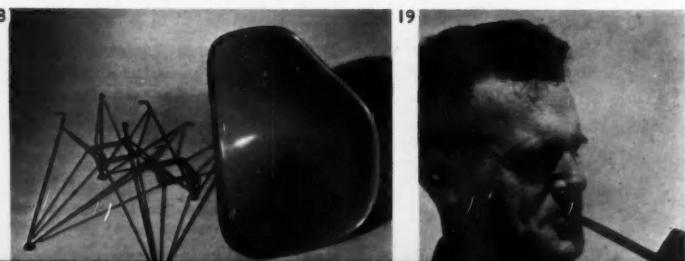
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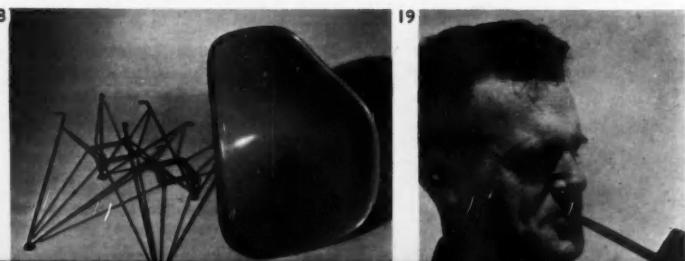
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16



17



18



19

POLAND

Design becomes a profession

PAUL HOGARTH

Too little is known in the west of the industrial design standards and policies of the Iron Curtain countries. Reports and illustrations of their post-war architecture suggest that they are completely out of step with modern western architectural thought, seeking instead to revive, on a proletarian scale, the classical swagger of their baroque history. The author of this article, who has recently studied conditions in Poland at first hand, finds that in industrial design the Poles are planning a more modern approach as part of the drive to industrialise a peasant economy, but that apart from traditional folk themes many designs are still of foreign origin.



WE IN THE WEST are familiar enough with the development of design-consciousness in industry. A long and intensive period of industrialisation has achieved the synthesis of artist and engineer which is the industrial designer. What is the situation, however, in those countries which before the war had primarily agricultural economies and which are only now undergoing their industrial revolution?

Poland for example, at the present time, is in the throes of industrial development comparable to that which took place in early nineteenth-century Britain. Until recently the appearance of Polish manufactured products was, by our standards, outdated and ugly. Immediately after the war, design, not unnaturally, was thought superfluous; the designer a person unknown outside the spheres of publishing and publicity.

Since then, in spite of a backward economy, unprecedented devastation and great loss of life during the war, Poland has embarked on an ambitious programme of industrialisation. The influence of an older



ABOVE Prototype of a low-cost tea service designed for mass-production by the Institute of Industrial Design.

RIGHT Plastic handbag designed by the Institute.

LEFT Platinum brooch – one of a series commissioned by the Institute from Henryk Grunewald, a Polish graphic artist.

FAR LEFT The symbol of the Polish Institute of Industrial Design.



generation of painters and graphic designers, through the medium of the Association of Polish Artists, contributed much to official interest in improving the appearance of a large range of products; moreover, the growing importance of the country's foreign trade made design a factor of prime importance in certain markets. Once the complicated structure of a socialised economy had been consolidated and a network of department stores opened, a marked public preference for designed goods soon began to assert itself. In a few years the economic basis for the design of manufactured goods had been established and with it the need for a design profession.

Official designs

A government-sponsored commission established the Office for the Supervision of Production Aesthetics,

which in 1950 was transformed into an institute of design to cope more efficiently with the problems of establishing a design profession to create designs for industry. After working in somewhat congested circumstances, the Instytut Wzornictwa Przemysłowego (Institute of Industrial Design) moved into a specially designed building in central Warsaw in the early months of 1953.

The Office of the Supervision of Production Aesthetics had done much preliminary work and, as a result of collaboration with a group of professors from the Academies of Fine Art in Warsaw and Sopot, faculties of design were established in these important schools. By 1953, the Institute had a staff of designers creating designs for the following industries: furniture, glass, ceramics, toys, jewellery, clothing, shoes, textiles and domestic electrical equipment. Each industry has its own design group equipped with studios



LEFT *Textile design by the Institute.*

and workshops where design and research as well as the building of prototypes are carried out. The Institute is mainly concerned with design for mass-production although it does act as an agency for designs created by folk-artists working in various parts of the country. Close contact is maintained with a group of specialised industrial schools such as the Zakopane School of Lacework and Textiles, the Lodz School of Leather and Haberdashery and the tailoring schools of Warsaw, Lublin and Stalinogrod (Katowice). Many designs are purchased from exhibitions in such schools. Designs are also commissioned on a free-lance basis on payment of an outright fee.

Almost all industrial enterprises employing more than a hundred employees are owned by the State, but small factories and workshops, run on co-operative lines or privately owned, are not compelled to manufacture the designs created by the Institute, although many do so. The majority of the co-operative workshops are associations of profit-sharing craftsmen who create their own designs from traditional folk-art motifs according to region or province. The products of these workshops are sold throughout the country in department stores as well as in special folk-art shops.

Foreign influences

After a new design has been created by a designer employed or commissioned by the Institute, it is introduced to a design committee by the chief designer of the particular design group. Each industry has its own design committee, composed of representatives from the State distributing agencies, buyers from department stores, artists, members of the public and technicians from the particular factory which will manufacture the designed article. Public criticism and suggestions for

improvement are expressed through the medium of this committee.

As yet, the work of the Institute does not include the products of light and heavy engineering industries or the packaging of food products. A start has been made in the motor-car industry - a young and, for Poland, quite new industry. Hitherto, Polish-made passenger cars and commercial vehicles have been manufactured from Soviet designs. The new plants which commenced production during 1952 were built with the advice and guidance of Russian technicians. A group of Polish designers worked with this original Russian team; now they are working on the design of a series of new models of different types of both passenger cars and specialised commercial vehicles. The first - a four-seater family car called the SYRENA - is now in production.

Folk-art

A press and radio campaign to improve popular taste has been commenced on the initiative of the Institute. Growing interest in design as a profession is reflected in the fact that out of 30,000 students now attending schools of art, more than a quarter are training as designers for industry or handicrafts. Our Utility scheme has been included among the study courses arranged for young designers at the Institute, while the Arts and Crafts Movement both in Britain and Germany has also been the subject of many lectures and magazine articles.

The Institute collects drawings made by children. These mostly incorporate their creators' favourite flowers, animals, means of transport and, above all, machinery of every kind, and are used as a source of ideas by designers.

It has not been easy to find experienced artists and craftsmen to train aspiring designers or indeed to practise as designers themselves. There are no artist-designers of the stature of William Morris, who would recruit designers from the ranks of the painters and architects on purely moral grounds. Those artists and architects who could bring a new outlook into the aesthetic problems of design prefer to follow their own professions where they



LEFT *Table mat in tulle - an example of the work of a folk-art co-operative in Kurpiow, which employs 200 peasant girls.*

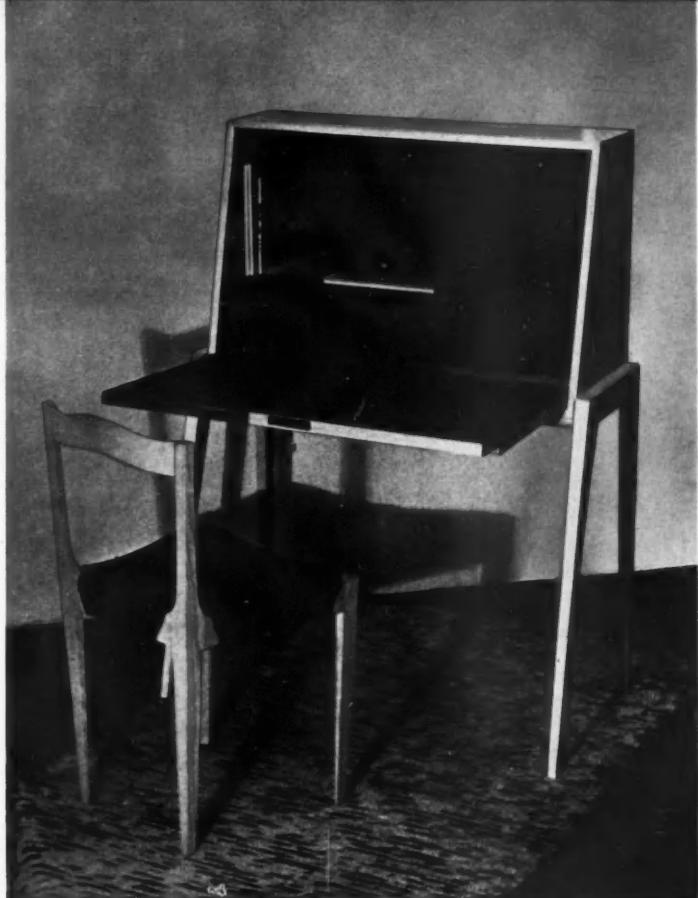
RIGHT Bureau and chair designed by Boguslawski for the Arkady workshop.

have at the present time more than enough work to do. The result of this shortage of talent is reflected in the uneven quality of the majority of the work now being done. At the present time, the best work is for those industries which are able to express the rich national tradition of folk-art.

Of particular interest in this respect is the part played by the rural folk-artists. With the co-operation of the Central Institute of Folk Art, craftsmen and craftswomen work in the Institute of Industrial Design's studios and workshops with professionals for periods of six months and longer. The influence of folk-art has of course always been strong in Polish graphic art and commercial design. One recalls the illustrations and posters of Lewitt-Him and the paper-cuts of Tadeusz Lipski. But the application of this tradition to design intended for mass-production and a working association of professional and folk-artist to foster it, is quite new and is already producing interesting results.

But a tradition of folk-art, however rich, does not help to solve the design problem of a ship or locomotive. A tradition of an altogether different kind is required here. Current Polish designs for ships, locomotives and various other items of industrial equipment seen in the summer of 1953 were the work of engineers rather than designers.

It will be readily concluded from this brief survey that industrial design in Poland is in an embryonic stage. The manufacture of many items for the first time presumes a reliance on previously accepted forms, including those of other countries. In the design of textiles, ceramics, furniture and toys, the Poles have a strong and independent tradition, but they have yet to find a satisfactory aesthetic formula for the design of the products of heavier industry.



ABOVE RIGHT Chair in cane designed by Gatoyscy for the Institute.

PAR RIGHT Chair designed by Goniewski for the Arkady workshop.

RIGHT A toy from the Warsaw province.

NEWS

New Council member

For more than 300 years the honourable office of Master Cutler has been filled by men whose names reflect Sheffield's unique contribution to the development of steel. This year the holder, Mr R. L. Walsh, has shown how staunch a believer he is in the importance of design as an aspect of quality in cutlery by accepting the invitation of the President of the Board of Trade to become a member of the Council of Industrial Design during his strenuous year of office.

Catalogue exhibition

An exhibition of 'A Hundred Good Catalogues' will be held in London next October with examples selected by the British Federation of Master Printers in conjunc-

tion with the CoID. The exhibition represents the second occasion that the BFM and the CoID have collaborated in promoting good design in the printing industry. The first was in 1950 when an exhibition entitled 'Design in Business Printing' was staged at the CoID headquarters and subsequently toured important centres in the United Kingdom.

All those concerned with the production of catalogues are invited to send their best examples, which must have been printed in this country since January 1 1950, to the British Federation of Master Printers, 11 Bedford Row, London WC1. The closing date for submission of entries is June 30.

The organisers have defined a catalogue as "printed matter illustrating and/or listing goods or services for sale or hire".

BIF changes

A company under the chairmanship of Sir Arthur J. G. Smout has been formed to take over from the Board of Trade the organisation and management of the London sections of the 'British Industries Fair'. The new company is called the British Industries Fair Ltd and will also be responsible for the publicity of the Fair as a whole, though the Birmingham section will continue to be organised by the Birmingham Chamber of Commerce.

Inquiries at the Centre

The illustration shows the stand of the BIF 'Design Centre' at Earls Court, the first selective display of well-designed British products to be held at a 'British Industries Fair' (DESIGN May pages 7 and 8). 360 letters of inquiry were sent on to the firms concerned and many visitors to the stand came also to see 'Design Review' from which the majority of exhibits were chosen. The design was by Neville Conder for the CoID and Board of Trade.



'Contour' spectacles

A series of new shapes for spectacles, introduced recently by Stanley Unger, shows an approach to both the styles of the frames and the function of the lenses which may well affect the future course of spectacle design. The lenses follow the curve of the face giving a wider field of vision than is normally possible with conventional shapes. At the same time the frames are tailor-made to match the contour of the eyebrow, the line being continued without interruption to the ear. Unfortunately, the spectacles are not so compact when folded as normal designs and would require bulky cases.

Exhibition of photography

The annual exhibition of photography by students of the Polytechnic School of Photography is to be held from July 9-15. Always of interest as a pointer to what high-quality photography should attain, the exhibition this year will reflect the range of the School's activities which has now broadened to include colour work; both colour transparencies and colour prints made in the School will be shown.

The exhibition covers portrait, commercial, fashion, architectural and advertising photography by first- and second-year students. Approximately 75 per cent of first-year students who, in the opinion of the staff, would benefit from it, are able to stay on for the second year of training, during which time they are encouraged to express their own ideas, having grasped the necessary fundamentals of theory and practice during the first year.

The internal examinations taken at the end of the first and second years give exemption from the Preliminary and Intermediate examinations of the Institute of British Photographers as the School has now been recognised by that body. Students are also trained for the Intermediate and Final examinations of the City and Guilds of London Institute.

Textile exhibition

'Textiles in Modern Life' will be the theme of the 'International Textile Exhibition' to be opened at the Palais du Centenaire in Brussels on June 25. It will be the second of a series of international exhibitions of textile products and clothing and of textile

machinery and equipment, the first having been held at Lille in 1951.

Advertisers in DESIGN

Newman Books Ltd will no longer act as advertisement representative for DESIGN after June 30. After that date DESIGN advertisements will be handled direct from the business offices of the magazine. The change, which has been made by friendly agreement with Newman Books Ltd, will enable the business activities of the magazine to be co-ordinated under one roof. Arthur Sudbery, the present circulation manager of DESIGN, will be in charge of advertisements in the future. Copy, orders and correspondence about advertisements should after June 30 be sent to him at Tilbury House, Petty France, London sw1.

New ideas for record players



This record player has been designed by Patrick Gwynne for his own use and is intended to suggest new lines of thought for this type of equipment rather than as a prototype for quantity production. Its main advantage is that it can be controlled comfortably from a sitting position. The main body is covered with dark brown leather including the tambour slats and is trimmed with brass. The interior is covered with bright red plastic sheet. The bent PERSPEX lids allow the records to be watched while they are being played.



Coffee houses revived

An aspect of life common in the eighteenth century is being revived today - coffee houses, coffee shops and coffee bars, fashionably decorated to attract an 'educated' public, are springing up all over London. The 'Gaggia' in Dean Street, above, is the latest of these bars, and its style reflects influences as far apart as Italy, the USA and our own Royal Festival Hall. The curved bar is studded and padded with leather and the wall behind is hung with hand-made earthenware plates (which conceal wall lights) by William Newland, Nicholas Vergette and Margaret Hine. The inlaid wood mural panels by John Jones, a student at the Slade School of Art, are interesting experiments in this often misused medium. The interiors were designed by Geoffrey Crockett, consulting architect to the contractors, the Davis Fabrication Company.

Dollar contract

Rotaprint Ltd, makers of the R30/90 offset litho-printing machine previously illustrated in DESIGN (February page 6), recently announced that a large dollar contract for the supply of the British-built machines to the USA has been secured. The machine, which was designed by A. B. Kirkbride in collaboration with C. D. F. Middleton, is an example of the high design standard which is now being achieved by several manufacturers of office equipment. It was introduced at the 1953 'British Industries Fair' and was on show again with slight modifications at this year's BIF.

Office environments

A one-day conference on the working environment in offices, its effect on efficiency and morale, was held recently at the Industrial Welfare Society. It was attended by 85 delegates representing about 50 firms.

Miss E. M. Pepperell, Assistant Director of the Society, pointed out that with increasing mechanisation the intrinsic interest of office work was decreasing for many. As the work grew less absorbing the staff were more and more inclined to overlook poor conditions which they might have accepted in the past. Dr P. A. B. Raffie, Senior Medical Officer of the London Transport Executive, discussed recent research into lighting, heating and ventilation. From the medical viewpoint he thought that the small office was in every way preferable to the large. Mr S. A. Wood, chief colour adviser, Imperial Chemical Industries, described the free advice service given on colour schemes by his firm to those who were about to repaint their offices or factories.

Miss B. O'Donovan, establishment officer of the CoID, explained the services offered by the Council to office managers and office equipment buyers. Those who wished to employ professional help in redecorating their offices could apply to the Council's

Record of Designers for assistance in finding a suitable interior designer. 'Design Review', a photographic record of well-designed products divided into sections devoted to chairs, tables, light fittings, etc, could be consulted before new furniture was purchased.

Swedish designer in London

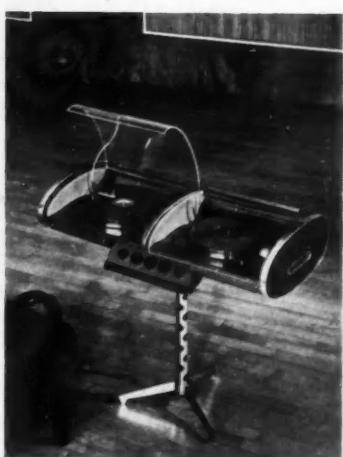
The Scientists and Technologists Engineering Partnership Ltd announces that Ralph Lysell, a Swedish designer, is to join its industrial design department. Mr Lysell's experience of mechanical and product design comes from his work in the United States, South America, Germany, France and Scandinavia. He was responsible for the design of the modern Swedish American Liner 'Stockholm'.

Domestic advisory service

A new advisory service for those who are re-planning their kitchens has been set up at Peter Jones in Sloane Square. Called the 'Joan Storey Home Service Centre', it is one of several which are being formed in British retail stores.

Inventions reviewed

The National Research Development Corporation has issued the first of a series of quarterly bulletins which will briefly outline new inventions available for introduction to industry. The Corporation was formed four years ago "to secure the development or exploitation of inventions resulting from research carried out with public funds". Since then it has acquired the patent rights of nearly 1,000 inventions covering many different subjects. Its work in connection with an experimental chair was mentioned in the last issue of DESIGN (May page 38). The Corporation is anxious, however, to make it clear that its original announcement in connection with this chair was misleading. The chair is constructed of a combination of



asbestos felt and phenolic resin and is sold under the name DURESTOS by Turner Bros Asbestos Ltd. The National Research Development Corporation is hoping to promote commercial applications of the moulding process but has no rights in the material as such.

Careers in textiles

The Textile Institute has issued a new 52-page booklet entitled EDUCATION FOR CAREERS IN TEXTILES. The purpose of the booklet is to provide a comprehensive guide to the opportunities in textiles for those who aspire to professional status in the industry as either technologists or designers. A list of subjects which can be studied at universities and colleges is given, together with an index of courses leading to degrees and diplomas. The booklet will be sent free of charge to those who apply to the Institute direct.

Dress print designs

The first prize of £250 was awarded to Marion J. Gordon of Carlisle for her entry in the printed dress textile design competition recently organised by the Berne Silk Manufacturing Co (England) Ltd. In addition she is to receive a royalty of 2d a yard sold in Great Britain. The competition was inspired by Walter Meyer, the chairman of the firm, who joined in judging nearly 1,500 entries. Six special prizes of £25 each were also awarded to other competitors, and a prize of £50 for the best design submitted by a student. The winning designs and the printed fabrics are to be displayed early in July at a London showing of the firm's 1955 collection.

Modern silverware

Despite the strides which have been made since the war in the design of many domestic products there is still an almost total absence of good modern silverware for the table. Heavy purchase tax and high prices generally act as a deterrent to manufacturers who are unwilling to take risks in an uncertain market. These candle-holders are experimental hand-made prototypes which would be simple and comparatively cheap to produce. They could be craftsman-made or produced on a larger scale by pressing techniques using cheaper metals such as nickel. The candle-holders are simple and decorative but the sauce boat is less satisfactory and might need modifications, particularly to the handles, before production could be considered. Designed by Eric G. Clements and made by Harry Locke.



DESIGN binders

New binders are now available for readers who wish to keep their loose copies of DESIGN in a tidy pile within a strong cover. The binders have a red cloth covering with gold lettering. A new type of fixing consisting of steel bands which slide under the wire stitches ensures that the magazines are held securely but at the same time may be easily removed if required. The binders are available from the Circulation Manager, DESIGN, Tilbury House, Petty France, London SW1, at a cost of 12s post free.

LETTERS

Rules for designers

SIR: J. Beresford-Evans' advice to draughtsmen designers (DESIGN May pages 12-15) is, I am sure, given with the best of intentions. No one will deny the importance of stimulating appearance-consciousness among draughtsmen; but is listing 'what to do' and 'what not to do' the best way of doing it? The result of untrained designers using rules such as those he advocates in his text and diagrams are only too obvious in the 'Coronation' class locomotive which he himself criticises.

There cannot possibly be any rules in the appearance part of a design as such, and to create arbitrary ones for the misguidance of the poor draughtsman, who already has far too much to think about, will do incalculable harm to the cause of industrial design. By all means tell him that the appearance of the product is important, but, just as he must consult experts on electronics, metallurgy, and so on, he must also consult the industrial designer.

This is not an attempt to prevent the enterprising draughtsman from learning the 'tricks of the trade', because there are none - at least, none that he does not already know. The only subjects taught in industrial design schools are engineering design, draughtsmanship, and technical subjects relating to production; the rest being heightening of aesthetic appreciation by constant example, practice and criticism.

I have every sympathy for the average draughtsman, who works under poor conditions for a low salary and seldom attains any standing in his firm, unless he leaves the drawing-board for an executive position, thus ceasing to be a true designer. Only when he is given genuine credit for what he does, a position relative to his contribution, encouragement to study and appreciate the arts, and more free time in which to do it, will he be able to make any real improvement to that vast majority of engineering products which never receive the attention of an industrial designer.

JAMES SCOTT SMITH
Abbey House
London SW1

BOOKS

The Royal Society of Arts 1754-1954,
Derek Hudson and Kenneth W. Luckhurst,
John Murray, 30s

This book, which brings up to date the work of two earlier histories, is intended by the Council of the Society to mark its bicentenary; in it a detailed account of some of the Society's activities and interests is supported by some fifty illustrations, three appendices, and an index.

Like many other English institutions the Society owes much of its success to its readiness to adapt itself to the changing requirements of the times. The 'Great Exhibition' of 1851, which the Society initiated, conveniently divides its history into two periods of near enough one hundred years each; the book deals with these separately, showing how the early system of awarding premiums "for the encouragement of arts, manufactures and commerce" broke down before the advance of the Industrial Revolution until, in about 1841, the Society's affairs were in a serious

state; then how, owing to the able and devoted presidency of Prince Albert no less than to the success of its exhibitions, the Society flourished again until, by concentrating its energies on education and propaganda, it has grown to be more vigorous than ever before.

These fluctuating fortunes have not been traced without some lack of continuity. Although in part two an attempt has been made to follow the sequence of part one, the succession of names and dates makes the book interesting and amusing though it is, rather a reference book than a narrative history. The range of the Society's activities is immense: one part only of these has been surveyed, and that perhaps the more successful part. Yet if sometimes there is an echo of lost causes, a hint of wasted energies, the reader cannot deny that the Society has played the part of the gadfly most persistently. With the authors he must admire its public spirit and applaud its courage: with them he must wish 'Long may it flourish'.

IAN COLQUHOUN

Display (Interiors Library No 3), edited with an introduction by George Nelson, Whitney Publications Inc, £5

Perhaps the outstanding feature of this attractive book is that most of the work illustrated represents a particular trend in contemporary display technique. Throughout its many pages of excellent illustrations, the architectural influence predominates. The 'tubular-cubular' approach so much in evidence with the more advanced type of exhibition work rules the day.

In selecting his material George Nelson has drawn extensively on Italian work, particularly from the triennial exhibitions, liberally supported by his own work and that of his colleagues. Regular subscribers to INTERIORS will recognise many of the illustrations but most of these fortunately bear repetition. The book abounds in work of spartan simplicity, reflecting much of Mies van de Rohe's influence.

Despite the quantity of illustrations, the book, however, is surprisingly limited in scope, partly due, one may suspect, to a certain disdain of the more mundane merchandise commercial exhibitions and stores have to contend with. This puritanical note running right through the volume is perhaps a little unreal and sidesteps much of the principal tasks of display and exhibition work, that of resolving technical, typographical and space problems in relation to specialised goods and services. Lettering and typography - in fact the message - constitute a major consideration in the planning of practically every display, a requirement normally necessitating much specialised skill on the part of the designer.

Lettering, however, has not been allowed to interfere with the purity and elegance of most of the work selected - there is in fact practically none to be found. This is a little startling with a volume with DISPLAY as its title.

If, however, one accepts these limitations the resulting book with its lively text and attractive format provides a healthy and beneficial influence, reflecting high standard of professional competence though rather a limited contribution to the field of display.

BEVERLEY PICK

School Design and Construction, J. A. Godfrey and R. Castle Cleary, Architectural Press, 36s

This is an excellent book in many ways, not least in the historical section in chapters one and two, for it gathers together all the appropriate references in the building regulations and Ministry of Education Building Bulletins. It is comprehensive and (intentionally) repetitive. It is unfortunate



New Offices for Canadian Wheat Board

The illustration shows the Director's room at the offices of the Canadian Wheat Board which have recently been redesigned by THM Partners. The wall behind the desk is panelled with cedar and contrasts with the remaining walls which are pale turquoise. Maroon carpet, flame curtains and green upholstery complete the colour scheme. The sapele mahogany cabinet and desk were both specially designed by B. M. Lewin of THM Partners.

that the index is not equally comprehensive - in many cases only one reference is given to an item which appears several times in the text.

So far as the sections on furniture are concerned, several criticisms could be made, particularly as regards optimum heights of chairs and tables. Although it is stated that "a chair that is slightly too low is better than one that is too high", the seat heights given (15 to 17 inches) are at variance with much of the anthropometric data available. Three heights of 14 to 16 inches would suit many more children, and even these chairs would be too high for the younger and shorter children.

As a reference book for architects and students it will doubtless have great value, but educationists will wish that the promise implicit in the aim of the book, as set out in the preface - "to provide a comprehensive review of the main aspects of school design" - had been more fully implemented. Surely a review should include critical comment on existing practice, and even constructive suggestions as to alternatives, rather than a dispassionate catalogue of existing practice and precept.

S. R. FOOT

Wrought Iron Work, issued by the Rural Industries Bureau, 8s 6d

The RIB, which, to put it briefly, exists for the benefit and preservation of rural industries, has published a second book on the art of blacksmithing. This time the subject is taken a stage further, and deals with wrought iron work. It is intended to refresh the smith's knowledge on the subject, and to provide a text-book for the encouragement of apprentices in the art.

The previous publication, THE BLACKSMITH'S CRAFT, was good, but this one is excellent in all respects, as regards its purpose, presentation and simplicity. Filling a

long-standing gap in craft publications, it will also render service to designers, by showing them traditional techniques involved, and introduce them to a general feeling for the medium. A point to note is the preference for the use of forge welding for the majority of existing idioms of design in wrought iron. In time, perhaps, an equivalent style of decorative ironwork will develop from the use of gas and electric welding and cutting methods.

GEOFFREY CLARKE

The Science of Colour, Constable, 63s

This book has been written by several distinguished members of the Colorimetry Committee of the Optical Society of America. It has been in course of preparation since 1932 and was completed in 1952 after 20 years' work in subjecting the texts to review, criticism, revision and rearrangement by the committee. The result is intended to be the last word on colour (the publishers call it definitive) and whilst I would not subscribe to this view it is at any rate a completely authoritative report on the philosophy of colour, the anatomy and physiology of colour vision, the psychology of colour, and finally the measurement and control of colour. The text is supported by a profusion of graphs, charts and tables, together with some really excellent colour plates.

The book is addressed to "the Scientist, Artist, Manufacturer and Student" and in order to give the book a semblance of popular appeal the first two chapters are designed to carry the non-technical reader by easy stages from considerations of the art of colouring to the science of colour. This section contains much valuable data on the use of colour in Ancient Babylon, Egypt, Crete, Greece and Rome, but I feel that with rather less meticulous detail a broader

survey could have mentioned some of the more significant developments of the eighteenth and nineteenth centuries, including the gradual introduction of chemical colours and the discovery of synthetic dyes, without which the Ostwald and Munsell colour systems could not be visualised today. Reference is made later (page 162) to unpleasant or discordant colours and it is strange that the authors do not trouble to define discord, for it was O. N. Rood, the American colourist, who first drew attention to the reversal of the 'natural order' of colour which causes discord.

The CIE (Commission Internationale de l'Eclairage) system of colorimetry is discussed in great detail and the CIE chromaticity diagram is beautifully reproduced in full colour. The greater part of the book, however, can only be comprehended by the scientist or one who is very well versed in advanced physics.

A. E. HURST

Simple Craft Jewellery, by Claude Geoffroy-Déchaume, Faber & Faber, 8s 6d

Geoffroy-Déchaume has succeeded in presenting some of the elements of a complex craft in a straightforward and attractive manner; his technical explanations are clear and concise, supplemented with easily understood line drawings.

The main object of the book is the adaptation of traditional skills to therapeutic purposes, and simplicity is necessarily the keynote of the exercises. Bearing in mind the limitations thus enforced, perhaps a more progressive sequence or grading of the exercises, leading up to more complete articles of jewellery, would add to the incentive for the long-term patient. Some simple methods of mounting stones would also help to provide an additional attraction.

The introduction of aluminium as a basic material is of a practical nature for the uses

envisioned by the author. There is a touch of adventure in its application that is stimulating and opens up many possibilities for the inventive mind. Examples of historical, and contemporary costume jewellery are illustrated.

A. R. EMERSON

The Graphis Annual, edited by Walter Herdeg and Charles Rosner, Sylvan Press, 63s

A reminder of this excellent annual is not out of place now that the opening of the 'annual' season, with its usual number of varied subjects and standards of work, is over. This newcomer has maintained a high standard in its second instalment of advertising art.

P.H.

Acknowledgments

In his article on 'Ergonomics' J. Christopher Jones wishes to acknowledge the following sources of reference and material: 'The Visual Presentation of Instrument Data' by K. F. H. Murrell, from the transactions of the Society of Instrument Technology, March 1952; C. B. Gibbs, articles on ergonomics in the ELECTRICAL TIMES, April 3, May 15 and July 3 1952; and 'A Survey of Modern Methods of Presentation of Instrument Readings and Recordings', by L. B. S. Golds, from the proceedings of the Institution of Electrical Engineers, part two, December 1951.

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Correction

DESIGN April page 17, figure 11: The name of the manufacturer of the crystal vase has been changed to Webb Corbett Ltd.

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